



Hantaviruses and climate change

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Abstract:

Most hantaviruses are rodent-borne emerging viruses. They cause two significant human diseases, haemorrhagic fever with renal syndrome in Asia and Europe, and hantavirus cardiopulmonary syndrome in the Americas. Very recently, several novel hantaviruses with unknown pathogenic potential have been identified in Africa and in a variety of insectivores (shrews and a mole). Because there is very limited information available on the possible impact of climate change on all of these highly dangerous pathogens, it is timely to review this aspect of their epidemiology. It can reasonably be concluded that climate change should influence hantaviruses through impacts on the hantavirus reservoir host populations. We can anticipate changes in the size and frequency of hantavirus outbreaks, the spectrum of hantavirus species and geographical distribution (mediated by changes in population densities), and species composition and geographical distribution of their reservoir hosts. The early effects of global warming have already been observed in different geographical areas of Europe. Elevated average temperatures in West-Central Europe have been associated with more frequent Puumala hantavirus outbreaks, through high seed production (mast year) and high bank vole densities. On the other hand, warm winters in Scandinavia have led to a decline in vole populations as a result of the missing protective snow cover. Additional effects can be caused by increased intensity and frequency of extreme climatic events, or by changes in human behaviour leading to higher risk of human virus exposure. Regardless of the extent of climate change, it is difficult to predict the impact on hantavirus survival, emergence and epidemiology. Nevertheless, hantaviruses will undoubtedly remain a significant public health threat for several decades to come.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Unspecified Exposure

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

Climate Change and Human Health Literature Portal

resource focuses on specific location

Global or Unspecified

Health Impact: ☒

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Zoonotic Disease

Zoonotic Disease: Hantavirus Pulmonary Syndrome

Resource Type: ☒

format or standard characteristic of resource

Review

Timescale: ☒

time period studied

Time Scale Unspecified